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Abstract

PURPOSE: To prevent the deterioration of a single crystal layer as well as to contrive simplification of the manufacturing process of the title semiconductor device by a method wherein the compound semiconductor single crystal layer grown in a growing device is picked out to outside the growing device after its surface has been coated with a silicon film.

CONSTITUTION: After a compound semiconductor single crystal layer 2 has been epitaxially grown on a single crystal substrate 1 by performing a molecular beam epitaxial growing method, the surface of the grown single crystal layer is coated with a silicon film 3, and it is used as a protective film for oxidization. When the Si molecular beam is used, the coefficient of adhesion on the surface of the compound semiconductor single crystal becomes high on the wide temperature range from the growing temperature to the room temperature of the compound semiconductor single crystal, the formation of an Si film is started immediately in the stage when the crystal growth is finished, and the falling period of the substrate temperature can be utilized in the above-mentioned process. Also, as said Si film is formed densely and uniformly, it sufficiently functions as a protective film if it is formed in the thickness same as or thicker than that of the single atomic layer.